

Claims

[c1] What is claimed is:

1.A method of detecting oxygen leakage comprising:
providing a detection wafer having a substrate and a metallic film with a first color positioned on the substrate;
loading the detection wafer into a reaction tube from a loading chamber, and subsequently, unloading the detection wafer from the reaction tube; and
observing a surface of the detection wafer to obtain a second color of the metallic film, wherein if oxygen leaks into the loading chamber, the second color is different from the first color.

[c2] 2.The method of claim 1 wherein the metallic film comprises a tungsten film and the first color is gold.

[c3] 3.The method of claim 2 wherein the substrate comprises a silicon substrate and the detection wafer further comprises a titanium nitride layer positioned between the tungsten film and the silicon substrate.

[c4] 4.The method of claim 1 wherein the loading chamber and the reaction tube are installed in a vertical-type pro-

cessing furnace, and the vertical-type processing furnace further comprises a wafer boat positioned in the loading chamber for carrying a plurality of semiconductor wafers and a boat elevator for moving the wafer boat between the loading chamber and the reaction tube.

[c5] 5.The method of claim 4 further comprising continuously blowing a nitrogen gas into the loading chamber, wherein a flow rate of the nitrogen gas is between 100L/min and 200L/min.

[c6] 6.The method of claim 5 wherein a temperature of the reaction tube is between 600

°C


and 800

°C

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[c7] 7.A method of detecting oxygen leakage comprising: providing a detection wafer having a substrate and a detection film with a first color positioned on the substrate; loading the detection wafer into a reaction tube from a loading chamber, and subsequently, unloading the detection wafer from the reaction tube; and observing a surface of the detection wafer to obtain a

second color of the detection film, wherein if oxygen leaks into the loading chamber, the second color is different from the first color.

- [c8] 8.The method of claim 7 wherein the substrate comprises a silicon substrate and the detection film comprises a metallic film.
- [c9] 9.The method of claim 8 wherein the detection wafer further comprises a buffer film positioned between the metallic film and the silicon substrate for improving adhesion between the metallic film and the silicon substrate.
- [c10] 10.The method of claim 9 wherein the metallic film comprises a tungsten film, the first color is gold, and the buffer film comprises a titanium nitride layer.
- [c11] 11.The method of claim 7 further comprising continuously blowing a nitrogen gas into the loading chamber, wherein a flow rate of the nitrogen gas is between 100L/min and 200L/min.
- [c12] The method of claim 11 wherein a temperature of the reaction tube is between 600

and 800

°C

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